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ON THE INVENTION AND USE OF FIRE-ARMS AND GUNPOWDER IN CHINA, PRIOR TO THE ARRIVAL OF EUROPEANS.

BY

G. SCHLEGEL.



We read in the History of the expedition sent by *Kubilai Khan* in 1293, to punish the King of Java, that, on the 15th of the third month, the army was divided into three bodies in order to attack *Kalang*; it was agreed that on the 19th they should meet at *Daha* ¹⁾ and commence the battle on hearing the sound of the *p'au* ²⁾).

Groeneveldt dared not translate this character *p'au* by "cannon", although he wonders that the sound this *p'au* produced was strong enough to be audible to three bodies of troops (who were each at a great distance one from the other). So he thought it was some kind of rocket. (Notes, p. 24, note 2). But, by this explication, the

1) *Daha* was situated in the actual residency of *Kediri* in East Java (Hageman, History of Java, Vol. II, p. 97).

2) 三月十五日分軍爲三道。伐葛郎。期十九日會答哈。聽礮聲接戰。Vide 元史, Book 210 and Groeneveldt's "Notes on the Malayan Archipelago", p. 24. This is a common Chinese phrase. We read in the *Hoa-tsién ki* 花箋記, Chap. 51, that it was agreed that the besieged should make a sally with all their troops the next evening, in the second watch, as soon as they heard the sound of a gun 約知明晚二更時、銃响鎮兵齊殺出。

difficulty is not removed; for it is not the question if the Mongols at that time had fire-arms, but if they had explosive powder, i. e. gunpowder.

Now, notwithstanding all what has been alleged by different european authors against the use of gunpowder and fire-arms in China, I maintain that not only the Mongols in 1293 had cannon, but that they were already acquainted with them in 1232.

We read in the *Pai Pien* (published in 1581) that on the walls of the city of *Si-ngan* (in *Shen-si*) was preserved a long time an iron cannon, called "Heaven-shaking Thunder". It had the form of a closed roller, on the top of which was a hole (vent) scarcely wide enough to admit a finger, and which cannon was for a long time not employed in warfare. It was an engine belonging to the *Kin* Tatars when they held *Pien* (modern *Khai-fung fu* 開封府 in Honan). In the *Annals* it is described as an iron canister, in which powder was put and kindled by fire, when the cannon went off, and the fire burst forth of it with a crashing sound as of thunder, which was audible at a distance of more than a hundred miles (about 33 engl. miles) and seared more than half a Chinese acre (about one twelfth of one english acre).

When the fire was lighted and it hit the iron cuirasses, they were all pierced ³⁾.

The *Kin* Tatars occupied the city of *Khai-fung* in A.D. 1232, where they were besieged by the Mongols; and in the *History of*

3) 西安城上舊貯鐵砲、曰震天雷。狀如合磬 (read 磬)。頂一孔、僅容指。軍中久不用。此金人守汴之物也。史載鐵罐 (read 磬)、盛藥、以火點之。砲舉火發。其聲如雷、聞百里外。所蕪圍半畝以上。火點著鐵甲皆透。Vide 稗編; apud Encyclop. 格致鏡原, Chap. 42, Article 砲 *p'ao* or guns.

the Sung-dynasty, translated by de Mailla, Vol. IX, p. 166, the passage translated by us, is equally given, though only in transcription.

His translation runs: "Il y avait alors à Cai-fong-fou des *Ho-pao* ou *Pao à feu*, appelés *Tchin-tien-leï*, dans lesquels on mettait "de la poudre, qui prenant feu éclatait comme un coup de tonnerre "et se faisait entendre à plus de cent *ly*; son effet s'étendait à un "demi arpent de terre tout autour du lieu où il éclatait, et il n'y "avait aucune cuirasse de quelque bon fer qu'elle fût qu'il ne brisât "(*read* perçât)".

Mailla adds: "Outre cette terrible machine, les *Kin* avaient encore "une espèce de javelot qu'ils appelaient *Fei-ho-tsiang* (飛火槍), "c'est-à-dire *javelot de feu qui vole*; dès que la poudre qu'ils y met- "taient prenait feu, il était poussé à plus de dix pas et faisait des "blessures mortelles. Ces deux machines étaient ce que les *Mongous* "craignaient le plus."

The Chinese text of the above is to be found in the 宋史紀本末 (Wylie, p. 22) and runs: 時有火礮名震天雷者。用鐵罐盛藥、以火點之。礮響、火發。其聲如雷、聞百里外。所蕪園半畝以上。火點着鐵甲皆透。

又有飛火鎗。注藥、以火發之、輒前燒十餘步。人亦不敢近。蒙古惟畏此二物。 Chapt. 90, fol. 4 verso.

The late W. F. MAYERS has also given a translation of these passages; but, as it seems, only after an excerpt in the *Wu-pi-chi* (武備志) in which the most important particulars are omitted, as will be easily seen by comparing his translation with mine and that of father De Mailla ⁴).

⁴) See Journal of the China Branch Royal Asiatic Society, Shanghai 1871, Art. V, p. 91.

I lay particularly stress upon the meaning of the character 透甲, to pierce, to penetrate, the cuirasses, which Mayers translates by "no armour could withstand their shock" and De Mailla by "il n'y avait aucune cuirasse qu'il ne brisât." Evidently both authors shrunk from accepting the fact that the cannon of the *Kin* Tatars were loaded with **bullets**. 透 only means to *pierce*, not to shock or to break. Examples taken at random from my Dutch-Chinese Dictionary; 箭透其頭, the arrow pierced his head; 箭透過甲, the arrow went through his cuirass; 透入骨髓, it penetrates through marrow and bones; 透到底, it penetrates till the bottom; 透心涼 cold piercing the heart; 參透, to penetrate into, to fathom; 平心靜氣能參透世事, with an equal mood and quiet spirit one is able to penetrate into the affairs of the world; 釘透, to pierce with nails: 雨從瓦間透入, the rain penetrated through the interstices of the tiles; 月光透窓, the moon-light penetrated through the window; 我看不透, I am not able to look through it; 放銃子打透其首, he fired a bullet through his head, etc.

If the missiles of these engines only smashed or broke the cuirasses, the historian would have written 破 or 碎, and not 透.

As for the use of 砲 or 礮, for balistas, we remark that the proper character for them is 拋車, "hurling Engine". I quote the following example from the history of *Li Tsih* (A.D. 594—669; Mayers, Chinese Reader's Manual N°. 372): 季勣列拋車、飛大石、所擋輒潰, *Li Tsih* put up balistas, which hurled big stones, and all what was hit by them was immediately crushed⁵).

The imperial dictionary of *K'ang-hi* defines the expression as 軍中以機發石曰拋車, that wherewith in the army stones are thrown by a spring, is called a Balista (*p'ao*).

5) Vide 唐書高麗傳, History of Corea in the Books of the T'ang-dynasty.

This character was also written 砲 and pronounced *p'ao*, and is defined in *K'ang-hi* as 飛石車, machine for throwing stones. It is only when these stones were thrown out of a tube, that the character 礮, commonly written 砲, "enveloped stones", replaced the old term 拋車, "hurling engine". The character 礮 is onomatopoeic and interchanged with the character 爆, to crackle, to sputter, as fire ⁶).

We have no need to remind the reader that, till very late, in Europe, stone bullets were used instead of iron ones for loading cannon. In Leyden these stone bullets, shot by the Spaniards during the siege of this town in 1574, are still to be seen, half embedded, at the foot of the gates of the town.

The mortars wherewith these stone bullets were shot, were called in French *Pierriers*, defined in Boiste and Nodier's "Dictionnaire universel de la langue française" as: "Mortier de 15 pouces de diamètre, destiné à lancer des pierres; petite pièce de canon de "2 à 3 livres de balle".

It is evident that this name was made in imitation of the old french *perrieres* (for *pierrières*), engines for hurling large stones; exactly as, in Chinese, the name of the balista *p'ao* was later applied to the gun-powder-cannons.

Neither Pauthier nor Yule have taken note of the above mentioned important passage in which it is impossible not to recognize the use of regular cannons, lighted by a vent (孔).

In the 羣書考索, a book not noted by Wylie, it is said, that in the third year of the eponyme *Hien-ping* of the Sung-dynasty

6) The characters 礮 and 爆 are pronounced as well *p'ao* as *p'ok*; with the latter pronunciation they mean to crackle, to sputter as fire.

(A.D. 1000), a certain *T'ang-fuh* presented (to the Emperor) a newly invented "Fire-ball-gun" ⁷⁾).

Somewhat later, in A.D. 1287, Kubilai Khan, during his war with *Nayan*, employed in a nocturnal expedition 10 soldiers, armed with guns (火砲), whose sound so frightened the enemy that he fled on all sides ⁸⁾).

We have thus no reason to doubt that the Mongols employed fire-arms in their expedition to Java, and the Javanese probably learnt from them to employ them also.

Ma Hoan, who accompanied, in A.D. 1413, the Eunuch *Ching Ho* to Java, says distinctly that the Javanese fired guns (放火銃) at their weddings.

This is still done to the present day. Raffles (*History of Java*, Vol. II, p. 350) says of the javanese weddings: "The procession moves on to the sound of national music and the occasional firing of cannon".

Mayers concluded from the statement in *Ma Hoan*, that the Javanese must have had fire-arms at that time ⁹⁾).

Marsden (*History of Sumatra*, 3d Edit., p. 347) equally says that fire-arms were known in Sumatra before the arrival of the Portuguese.

They were known in the 14th century in the state of *Padjadjâran* in West-Java.

According to the javanese history translated by Raffles and Hageman, this state was divided, after the death of its sovereign *Chiong Wanâra* in A.D. 1390, into several principalities, under about six different chiefs.

The principal regalia came into the hands of the king of *Ma-*

7) 宋咸平三年、唐福獻新製火毬鎗。

8) See Pauthier's *Marc Pol*, Vol. I, p. 289 in the note.

9) *China Review*, Vol. III, p. 178.

japáhít, among which were a gun, called *Nyahi setómi* and several others of smaller calibre. The gun *setómi* is now in the possession of the *Susuhúnán* ¹⁰).

In another javanese poem, the *Sěrat Kaṇḍa* it is told that, in the battle with an army of *Siyěm* (Siam), *Kamboja* and *Sokadana*, two large guns were captured, to which the names of *Guntur gěni* and *Jagur* were given.

The booty was offered to *Brawijaya*, king of Madjapahit ¹¹).

As *Brawijaya* became king of Madjapahit in A.D. 1299, and died in A.D. 1307 ¹²), the battle must have taken place during his reign, let us say in 1304.

It would prove at all events that the Siamese and Cambodians made use of cannon in their war with Madjapahit, as early as the 14th century.

It must be mentioned, however, that according to a Javanese poem containing the History of Baron SAKÉNDÈR, the princess *Tarurógó*, daughter of *Retnó Sekar Mandhopo*, who had been made a prisoner at the fall of the state of Padjadjaran, was later sold for three pieces of artillery to a Dutchman called Baron SUKMUL. These pieces bore the names of *Guntúr gěni* (agni), the fiery thunder, *Ki Pamuk*, the furious combatant and *Nyahi Setomi* ¹³).

But this is not in concordance with the fact that, at that time, no Dutch were established at *Jacatra*.

The first mention of a dutch embassy to Mataram (Java) took

10) Raffles, History of Java, Vol. I, p. 106; Hageman, Geschiedenis van Java, Vol. I, p. 21.

11) Dr. J. Brandes, Pararaton, or the Book of the Kings of Tumapel and Madjapahit, p. 190 (Transactions of the Batavian Society of Arts and Sciences, Vol. XLIX, Batavia 1896.

12) *Ibid.*, p. 188 and 189. According to another tradition. *Brawijaya* died in A.D. 1345. *Ibid.*, p. 191.

13) Cohen Stuart, Geschiedenis van Baron Sakéndhèr, Vol. II, p. 98.

place in 1573, when they offered to the Sultan of Mataram four pieces of artillery ¹⁴).

According to Raffles (l. c. p. 259), the large gun, called *Kiai Guntur Agni*, was cast in 1566 in Mataram itself ¹⁵).

A piece of this name is to be seen in the Kraton of *Surakarta*, on the *Sittinggil*. But this is no direct proof, because the Javanese are accustomed to give such fanciful names to cannons for which they have a superstitious feeling ¹⁶).

The old Javanese and Malay name for a *gun* (rifle) is *Bèdil*, a word for which a foreign etymology has been vainly sought. *Bèdil buluh*, bamboo-rifle, is the name of a child's popgun. The modern name of a gun is *sěndapang*, from the Dutch *snaphaan*.

According to the Annals of the Ming-dynasty, the natives of *Tongking*, against whom the emperor *Ching-tsu* had sent an expedition in A.D. 1407, employed tubes filled with inflammable material for purposes of warfare ¹⁷). But according to Pauthier's translation, it were the Chinese who made use of these fire-arms, which they called 神機鎗礮 or "guns with supernatural springs" ¹⁸).

As neither Mayers nor Pauthier give the chinese text of this important passage, I copy it here in the note. It is found in the 92d Chapter of the Books of the Ming dynasty, fol. 7 *recto*, of the fourth chapter of Military Memoirs (兵志四), Article 火器 or **Fire-arms**, and of which I give a new translation, so that the reader may judge for himself.

14) *Ibid.*, p. 163; Raffles, History of Java, Chronological Table of Events, Vol. II, p. 260.

15) Cohen Stuart, *op. cit.*, Vol. II, p. 164.

16) Cohen Stuart, *op. cit.*, p. 165.

17) Mayers in Journal of the North China Branch of the Royal Asiatic Society, 1871, Article V, p. 94.

18) Arrivant aux *Mings*, on voit que Tching-tsou, pour conquérir le *Kiao-tchi* (la Cochinchine), se procura des *p'áo* ou "canons" qui furent nommés des "*p'áo* ou canons retentissants à mouvements surnaturels" (Marc Pol, II, p. 474, footnote).

"What were anciently called *P'ao* were all machines for hurling "stones. In the beginning of the Mongol-dynasty (A.D. 1260), *p'ao* "(catapults) of the Western regions were procured. In the siege of "the city of *Ts'ai-chow* of the *Kin* (Tatars), fire was for the first "time employed (in these *p'ao*) ¹⁹, but the art of making them was "not handed down, and they were afterwards seldom used.

"When *Ching-tsu* pacified *Kiao-chi* (A.D. 1407), they (the Chi- "nese) procured (obtained) the art of the guns and cannons with "miraculous machinery, and they established a special regiment for "practising with them ²⁰. For their fabrication native and wrought "red copper was alternatively employed. Those for which iron was "employed, the malleable iron from *Kien* ²¹) was the best, and the iron "from *Si* ²²) only came next. They were of different size. For the "big ones carriages were employed; for the next in size and the "smaller ones, rests, pickets and ramrods ²³) were used.

"The big ones were of use for the defense (of a place); the small "ones were useful in battle. They were employed according to the "requisites, and the most important engines of an army in march" ²⁴).

19) The siege of this town, situated in the province of Honan, took place in A.D. 1233.

20) This makes it doubtful if the Chinese learnt the art from the Annamites, and it would rather seem that the Chinese employed cannon in the siege of the capital. Mayers, *l. c.* p. 94, says: "it must be admitted that the authority on which the statement rests appears inadequate".

21) Probably from the province of *Fuh-kien*. Cp. 建蓮 *kiên lién*, waterlily seeds coming from *Fuh-kien* (Douglas).

22) Either western iron, or iron from *Kiang-si*.

23) The fork-like rests used for reating the old muskets upon, are now called in Chinese 銃义架 (See my Dutch-Chinese Dict. *i. v.* *Musketwork*); the character 托 stands for 拓, old sound *t'ok*. The ramrod of a musket is called to the present day 銃拓 in Chinese (See my Dictionary and Douglas' Amoy Dict., p. 71: *chhèng thok*). Mayers' translation (p. 94) "frames, posts or staves" is not correct, and leads to a misunderstanding of this important passage.

24) 古所謂礮皆以機發石。元初得西域礮。攻金蔡州城始用火。然造法不傳。後亦罕用。

If the Annamites had invented fire-arms, they would not have borrowed from the Chinese the words *súng* 銃, fire-arms; *súng hiép* 銃挾, a gun; *súng Soăn* 銃短, a pistol = Chinese 短銃, a short gun, a pistol; *súng-tay* 銃𢱿, a pistol, = Chinese 手銃, a hand-gun, pistol; *súng-văn* 銃間 (read 門), a pistol = Chinese 門, numeral for guns and 銃, a gun; and *phát súng*, a gun-shot = Chinese 發銃, Canton *fát ch'ung*, to fire a gun.

The Cambodians borrowed the Chinese *p'ao* (Khmer *phav*, Cambodian *phau*) from the Chinese, with the meaning of *petards*.

In Cambodian the cock of a gun is called *kay*, which is curtailed Chinese (Canton) 火鷄 *fo kai* (*faw kaai*) fire-cock. In English it is also called *cock*, which is also used verbally in "to cock a gun".

The German (Hahn) and Dutch (haan) also mean cock. The French call it "le chien" (the dog); the Spaniards call it *pié de gato de escopeta*, "cat-foot of a musket", a very cumbrous circumlocution; the trigger of a gun is called *gatillo*, "a kitten". Have the English, Germans and Dutch borrowed the word from the Chinese, or has the reverse taken place? The coincidence is, at all events, remarkable.

The above quoted texts thus justify us to admit that the Chinese, as well as the Javanese, knew and employed fire-arms, cannon and guns, as early as the 13th and 15th century, long before Europeans came to these countries.

That, for a long time afterwards, the Chinese did not make use of fire-arms is due to the conservative spirit of the people, who

至明成祖平交趾、得神機鎗礮法。特置神機營肄習。制用生熟赤銅相間。其用鐵者、建鐵柔爲最。西鐵次之。大小不等。大者發用車。次及小者用架、用椿、用托。大利於守、小利於戰。隨宜而用。爲行軍要器。

stuck to their old arms, exactly as has been the case in Europe.

In the first half of the 13th century, a French poet looks with disgust to the supersession of the feats of chivalry by mere mechanical methods of war in the following lines:

*“Chevaliers sont esperdus,
Cil ont auques leur tens perdu;
Arbalestier et mineor
Et perrier et engigneor
Seront dorenavant plus chier”* ²⁵).

Have not even, in our modern armies, cuirassiers and dragoons, donned with steel cuirasses, which are not proof against the modern bullets, persisted as a survival of the time when fire-arms were unknown or little used?

Besides, the secret of the construction and the use of these fire-arms was jealously guarded by the chinese government; and it was only after *Kia Tsing's* reign (1522—1566) that fire-arms were introduced into the army ²⁶).

25) Yule's *Marco Polo*, II, p. 127. First Edition.

26) Mayers, *l. c.* p. 96, where stands, erroneously, 1422.